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Attach to Paper 1103
09/886,171
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Substitute for form 1449A/PTO		Complete if Known	
INFORMATION DISCLOSURE STATEMENT BY APPLICANT (use as many sheets as necessary)		Application Number	09/886,171
		Filing Date	June 20, 2001
		First Named Inventor	ZARLING, David et al.
		Group Art Unit	1636
		Examiner Name	not yet assigned D. LAMBERTSON
Sheet 1	of 6	Attorney Docket Number	A-66914-2/RFT/NBC

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U.S. PATENT DOCUMENTS

Examiner Initials*	Cite No. ¹	U.S. Patent Document		Name of Patentee or Applicant of Cited Document	Date of Publication of Cited Document MM-DD-YYYY	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		Number	Kind Code ² (if known)			
DL	1.	4,873,191		Wagner, et al.	10/1989	
DL	2.	4,888,274		Radding, et al.	12/1989	
DL	3.	4,950,599		Bertling	08/1990	
DL	4.	5,223,414		Zarling, et al.	06/1993	
DL	5.	5,273,881		Sena, et al.	12/1993	
DL	6.	5,264,618		Felgner, et al.	11/1993	COPY OF PAPERS ORIGINALLY FILED
DL	7.	5,416,260		Koller, et al.	05/1995	
DL	8.	5,460,941		Camerini-Otero, et al.	10/1995	
DL	9.	5,468,629		Calhoun	11/1995	
DL	10.	5,510,473		Camerini-Otero, et al.	04/1996	
DL	11.	5,272,071		Chappel	12/1993	
DL	12.	5,451,513		Maliga et al.	09/1995	
DL	13.	5,459,072		Mckay et al.	10/1995	
DL	14.	5,464,764		Capecchi et al.	11/1995	
DL	15.	5,487,992		Capecchi et al.	01/1996	
DL	16.	5,501,967		Offringa et al.	03/1996	
DL	17.	5,506,098		Zarling et al.	04/1996	
DL	18.	5,527,674		Guerra et al.	06/1996	
DL	19.	5,565,350		Kmiec	10/1996	
DL	20.	5,571,688		Mekalanos et al.	11/1996	
DL	21.	5,578,461		Sherwin et al.	11/1996	
DL	22.	5,580,734		Treco et al.	12/1996	
DL	23.	5,589,369		Seidman et al.	12/1996	
DL	24.	5,612,205		Kay et al.	03/1997	
DL	25.	5,614,396		Bradley et al.	03/1997	
DL	26.	5,605,793		Stemmer	02/1997	
DL	27.	5,731,411	**	Voloshin et al.	03/1998	
DL	28.	5,763,240		Zarling et al.	06/1998	
DL	29.	5,948,853		Pati et al.	09/1999	
DL	30.	6,074,863		Pati et al.	06/2000	

Examiner Signature	David Lambertson	Date Considered	11/11/03
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		Office ³	Number ⁴	Kind Code ² (if known)				
DF	31.	WO	91/19796			12/1991		
DF	32.	WO	92/08791			05/1992		
DF	33.	WO	92/15694			09/1992		
DF	34.	WO	93/05177			03/1993		
DF	35.	EP/JP	93/03736			03/1993		
DF	36.	WO	93/05178			03/1993		
DF	37.	WO	93/22443			11/1993		
DF	38.	WO	94/04032			03/1994		
DF	39.	WO	95/22625			08/1995		
DF	40.	EP	0718404			11/1995		
DF	41.	WO	96/40765			12/1996		
DF	42.	WO	97/05268			02/1997		
DF	43.	WO	97/04111			02/1997		
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DF	46.	Afonina, I., et al., "Sequence-specific arrest of primer extension on single-stranded DNA by an oligonucleotide-minor groove binder conjugate", <i>Proc. Natl. Acad. Sci. USA</i> , 93:3199-3204 (Apr. 1996).	
DF	47.	Arnold, G. "Directed Evolution: Creating Biocatalysts for the Future," <i>Chemical Engineering Science</i> , 51(23):5091-5102 (1996).	
DF	48.	Ausubel et al., "Short Protocols in Molecular Biology," 2nd ed. (John Wiley & Sons: New York), pp. 9-14 and 9-15 (1992).	
DF	49.	Baumann, P. "Human Rad51 Proteins Promotes ATP-Dependent Homologous Pairing and Strand Transfer Reactions In Vitro," <i>Cell</i> , 87:757-766 (1996).	
DF	50.	Bertling, "Transfection of a DNA/Protein Complex into Nuclei of Mammalian Cells Using Polyoma Capsids and Electroporation," <i>Bioscience Reports</i> , 7:107-111 (1987).	
DF	51.	Bertolotti, R., "Recombinase-mediated Gene Therapy", <i>Bionews</i> , Newsletter of BioTechnology, Health and Environmental Sciences, N14 (Nov. 1996).	
DF	52.	Camerini-Otero, R.D., et al., "Homologous Recombination Proteins in Prokaryotes and Eukaryotes", <i>Annu. Rev. Genetics</i> , 29:509-52 (1995).	

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DL	53.	Chen et al., "Tuning the Activity of an Enzyme for Unusual Environments: Sequential Random Mutagenesis of Subtilisin E for Catalysis in Dimethylformamide," <i>Proc. Natl. Acad. Sci. USA</i> , 90:5618-5622 (1993).	
DL	54.	Cheng et al., "RecA-Directed Hybridization of Psoralen-Monoadducted DNA Oligonucleotides to Duplex Targets," <i>NATO ASI Ser., Ser. C., Photochemical Probes in Biochemistry</i> , 272:169-177, P.E. Nielsen (ed.), (1989).	
DL	55.	Cole-Strauss, A., et al., "Correction of the Mutation Responsible for Sickle Cell Anemia by an RNA-DNA Oligonucleotide", <i>Science</i> , Vol.273:1386-1389 (Sep. 1996).	
DL	56.	Cox et al., "Enzymes of General Recombination," <i>Ann. Rev. Biochem</i> , 56:229-262 (1987).	
DL	57.	Cramer, A., et al., "Construction and evolution of antibody-phage libraries by DNA shuffling", <i>Nature Medicine</i> , Vol.2, No.1:100-102 (Jan. 1996).	
DL	58.	Cramer, A., et al., "Improved Green Fluorescent Protein by Molecular Evolution Using DNA Shuffling", <i>Nature BioTech.</i> , 14:315-319 (Mar. 1996).	
DL	59.	Doetschman et al., "Targetted Correction of a Mutant HPRT Gene in Mouse Embryonic Stem Cells," <i>Nature</i> , 330:576-578 (1987).	
DL	60.	Drumm et al., "Correction of the Cystic Fibrosis Defect In Vitro by Retrovirus-Mediated Gene Transfer," <i>Cell</i> , 62:1227-1233 (1990).	
DL	61.	Dunderdale et al., "Formation and Resolution of Recombination Intermediates by <i>E. Coli</i> RecA and RuvC Proteins," <i>Nature</i> , 354(19):506-510 (1991).	
DL	62.	Felgner et al. "Lipofection: A Highly Efficient, Lipid-Mediated DNA-Transfection Procedure," <i>Proc. Natl. Acad. Sci. USA</i> , 84:7413-7417 (1987).	
DL	63.	Fields and Jang, "Presence of a Potent Transcription Activating Sequence in the p53 Protein," <i>Science</i> , 249:1046-1049 (1990).	
DL	64.	Fu, D., et al., "Sequencing double-stranded DNA by strand displacement", <i>Nucleic Acids Res.</i> , 25(3):677-679 (1997).	
DL	65.	Gates, C.M., et al., "Affinity Selective Isolation of Ligands from Peptide Libraries Through Display on a <i>lac</i> Repressor "Headpiece Dimer", <i>J. Mol. Biol.</i> , 255:373-386 (1996).	
DL	66.	Gupta et al., "Activities of Human Recombination Protein Rad51," <i>Proc. Natl. Acad. Sci. USA</i> , 94:463-468 (1997).	
DL	67.	Hasty et al., "Introduction of a Subtle Mutation into the Hox-2.6 Locus in Embryonic Stem Cells," <i>Nature</i> , 350:243-246 (1991).	
DL	68.	Hasty et al., "The Length of Homology Required for Gene Targeting in Embryonic Stem Cells," <i>Mol. and Cellular Biology</i> , 11(11): 5586-5591 (1991)	**
DL	69.	Hunger-Bertling, K., et al., "Short DNA fragments induce site specific recombination in mammalian cells", <i>Mol. and Cellular Biochem.</i> , 92:107-116 (1990).	
DL	70.	Herzing, L.B.K., et al., "Novel <i>lacZ</i> -based recombination vectors for mammalian cells", <i>Gene</i> , 137:163-169 (1993).	

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DL	71.			Jasin, M., et al., "Targeted transgenesis", <i>Proc. Natl. Acad. Sci. USA</i> , 93:8804-8808 (Aug. 1996).			
DL	72.			Jayasena, V.K., et al., "Complement-stabilized D-loop--RecA-catalyzed Stable Pairing of Linear DNA Molecules at Internal Sites", <i>J. Mol. Biol.</i> , 230:1015-1024 (1993).			
DL	73.			Kido, M., et al., "Escherichia coli RecA Protein Modified with a Nuclear Location Signal Binds to Chromosomes in Living Mammalian Cells", <i>Exper. Cell Res.</i> , 198:107-114 (1992).			
DL	74.			Kim, et al., "Problems Encountered in Detecting a Targeted Gene by the Polymerase Chain Reaction," <i>Gene</i> , 103:227-233 (1991).			
DL	75.			Kim, et al., "Recombinant Fragment Assay for Gene Targeting Based on the Polymerase Chain Reaction," <i>Nucleic Acids Research</i> , 16(18):8887-8903 (1988).			
DL	76.			Koller et al., "Inactivating the β 2-microglobulin Locus in Mouse Embryonic Stem Cells by Homologous Recombination," <i>Proc. Natl. Acad. Sci. USA</i> , 86:8932-8935 (1989).			
DL	77.			Kowalczykowski et al., "Biochemistry of Homologous Recombination in Escherichia Coli," <i>Microbiol. Rev.</i> 58:401-465 (1994).			
DL	78.			Kowalczykowski et al., "In vitro reconstitution of homologous recombination reactions," <i>Experientia</i> , CH, Birkhauser Verlag, Basel, 50(50): 204-215 (1994)			**
DL	79.			Kuchelapati et al., "Homologous Recombination Between Plasmids in Mammalian Cells can be Enhanced by Treatment of Input DNA," <i>Proc. Natl. Acad. Sci. USA</i> , 81:3153-3157 (1984).			
DL	80.			Kowalczykowski, S.C., et al., "Homologous Recombination Proteins and their Potential Applications in Gene Targeting Technology," <i>A Gene Targeting</i> , CRC Press: Boca Raton, ed. Manuel A. Vega, Chap. 7:167-210 (1995).			
DL	81.			Kunzelmann, K., et al., "Gene targeting of CFTR DNA in CF epithelial cells", <i>Gene Therapy</i> , 3:859-867 (1996).			
DL	82.			Kutyavin, I.V., et al., "Oligonucleotides Containing 2-Amino adenine and 2-Thiothymine Act as Selectively Binding Complementary Agents", <i>Biochemistry</i> , 35:11170-11176 (1996).			
DL	83.			Langer et al., "Enzymatic Synthesis of Biotin-Labeled Polynucleotides: Novel Nucleic Acid Affinity Probes," <i>Proc. Natl. Acad. Sci. USA</i> , 78(11):6633-6637 (1981).			
DL	84.			Ludwig, D.L., et al., "Spontaneous and Induced Homologous Recombination Between <i>lacZ</i> Chromosomal Direct Repeats in CV-1 Cells", <i>Somane Cell and Molecular Genetics</i> , 20(1):11-25 (1994).			
DL	85.			Lukhtanov, E.A. et al., "Rapid and Efficient Hybridization-Triggered Crosslinking within a DNA Duplex by an Oligodeoxyribonucleotide Bearing a Conjugated Cyclopropylpyrroloindole," <i>Nucleic Acids Research</i> , 24(4):683-687 (1996).			
DL	86.			Matsumura, I., et al., "DNA Shuffling brightens prospects for GFP", <i>Nature BioTech.</i> , Vol. 14:366 (Mar. 1996).			
DL	87.			McCarthy et al., "Sensitive Homologous Recombination Strand-Transfer Assay: Partial Purification of a Drosophila Melanogaster Enzyme and Detection of Sequence Effects on the Strand-Transfer Activity of RecA Protein," <i>Proc. Natl. Acad. Sci. USA</i> , 85:5854-5858 (1988).			

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DL	88.			McEntee et al., "Initiation of General Recombination Catalyzed in vitro by the RecA Protein of Escherichia Coli," Proc. Natl. Acad. Sci. USA, 76(6):2615-2619 (1979).		
DL	89.			Meyer Jr., R.B., et al., "Efficient, Specific Cross-Linking and Cleavage of DNA by Stable, Synthetic Complementary Oligodeoxynucleotides", J. of the Amer. Chem. Soc., 111(22):8517-8519 (1989).		
DL	90.			Orkin et al., "Report and Recommendations of the Panel to Assess the NIH Investment in Research on Gene Therapy," National Institutes of Health, 7 December 1995.		
DL	91.			Pati, W., et al., "Sequence-Specific DNA Targeting", <i>Encyclo. of Cancer</i> , Vol. III:1601-1625 (1997).		
DL	92.			Podyminogin, M.A., et al., "Sequence-Specific Covalent Modification of DNA by Cross-Linking Oligonucleotides. Catalysis by RecA and Implication for the Mechanism of Synaptic Joint Formation", <i>Biochemistry</i> , 34:13098-13108 (1995).		
DL	93.			Podyminogin, M.A., et al., "RecA-Catalyzed, Sequence-Specific Alkylation of DNA by Cross-Linking Oligonucleotides. Effects of Length and Nonhomologous Base Substitutions", <i>Biochemistry</i> , 35:7267-7274 (1996).		
DL	94.			Radding, C. "Homologous Pairing and Strand Exchange in Genetic Recombination," <i>Ann. Rev. Genet.</i> , 16:405-437 (1982).		
DL	95.			Radding, C. "Helical RecA Nucleoprotein Filaments Mediate Homologous Pairing and Strand Exchange," <i>Biochimica et Biophysica Acta</i> , 1008:131-145 (1989).		
DL	96.			Rashid, N., et al., "Characterization of a RecA/RAD51 homologue from the hyperthermophilic archaeon <i>Pyrococcus</i> sp. KOD1", <i>Nucleic Acids Research</i> , Vol. 25, No.4:719-726 (1997).		
DL	97.			Rawls, R., "Hybrid DNA-RNA efficiently repairs gene", <i>C&EN</i> , p.11 (Sep. 1996).		
DL	98.			Reiss, B., et al., "RecA protein stimulates homologous recombination in plants", <i>Proc. Natl. Acad. Sci. USA</i> , 93:3094-3098 (Apr. 1996).		
DL	99.			Revet, B.M.J., et al., Homologous DNA Targeting with RecA Protein-coated Short DNA Probes and Electron Microscope Mapping on Linear Duplex Molecules", <i>rep. fr. J. Mol. Biol.</i> , 232:779-791 (1993).		
DL	100.			Roca et al., The RecA Protein: Structure and Function," <i>Biochemistry and Molecular Biology</i> , 25(6):415-455 (1990).		
DL	101.			Sauer and Henderson, "Targeted Insertion of Exogenous DNA into the Eukaryotic Genome by the Cre Recombinase," <i>New Biologist</i> , 2:441-449 (1990).		
DL	102.			Sena, E.P., et al., "Targeting in linear DNA duplexes with two complementary probe strands for hybrid stability," <i>Nature Genetics</i> , 3:365-372 (Apr. 1993).		
DL	103.			Shesely et al., "Correction of a Human β^5 -Globin Gene by Gene Targeting," <i>Proc. Natl. Acad. Sci. USA</i> , 88:4294-4298 (1991).		
	104.			Shortle et al (1989) <i>Proc. Natl. Acad. Sci.</i> 77(9): 5375-5379		

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				Filing Date	June 20, 2001
				First Named Inventor	ZARLING, David et al.
				Group Art Unit	1636
				Examiner Name	not yet assigned D. LAMBERT
Sheet	6	of	6	Attorney Docket Number	A-66914-2/RFT/NBC

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FOREIGN PATENT DOCUMENTS						
Examiner Initials*	Cite No. ¹	Foreign Patent Document		Name of Patentee or Applicant of Cited Document	Date of Publication of Cited Document MM-DD-YYYY	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		Office ³	Kind Code ² Number ⁴ (if known)			
DL	105.			Smith et al., "Homologous Recombination in E. Coli: Multiple Pathways for Multiple Reasons," <i>Cell</i> , 58:807-809 (1989).		
DL	106.			Smithies et al., "Insertion of DNA Sequences into the Human Chromosomal β -Globin Locus by Homologous Recombination," <i>Nature</i> , 317:230-234 (1985).		
DL	107.			Song et al., "Accurate Modification of a Chromosomal Plasmid by Homologous Recombination in Human Cells," <i>Proc. Natl. Acad. Sci. USA</i> , 84:6820-6828 (1987).		
DL	108.			Stemmer, W.P.C., et al., "Single-step assembly of a gene and entire plasmid from large numbers of oligodeoxyribonucleotides," <i>Gene</i> , 164:49-53 (1995).		
DL	109.			Stemmer, W.P.C., "Rapid evolution of a protein <i>in vitro</i> by DNA shuffling", <i>Nature</i> , 370:389-391 (Aug. 1994).		
DL	110.			Stemmer, W.P.C., "DNA shuffling by random fragmentation and reassembly: <i>In vitro</i> recombination for molecular evolution", <i>Proc. Natl. Acad. Sci. USA</i> , Vol. 91:10747-10751 (Oct. 1994).		
DL	111.			Sung et al., "DNA Strand Exchange Mediated by a RAD51-ssDNA Nucleoprotein Filament with Polarity Opposite to that of RecA," <i>Cell</i> , 82:453-461 (1995).		
DL	112.			Sung, P. "Catalysis of ATP-Dependent Homologous DNA Pairing and Strand Exchange by Yeast RAD51 Protein," <i>Science</i> , 265:1241-1243 (1994).		
DL	113.			Tabone, J.C. et al., "Factors Influencing the Extent and Regiospecificity of Cross-Link Formation between Single-Stranded DNA and Reactive Complementary Oligodeoxynucleotides," <i>Biochemistry</i> , 33(1):375-383 (1994).		
DL	114.			Thomas et al., "High Frequency Targeting of Genes to Specific Sites in the Mammalian Genome," <i>Cell</i> , 44:419-428 (1986).		
DL	115.			Valancius and Smithies, "Testing and In-Out" Targeting Procedure for Making Subtle Genomic Modifications in Mouse Embryonic Stem Cells," <i>Molecular and Cellular Biology</i> , 11(3):1402-1408 (1991).		
DL	116.			Voloshin, O.N., et al., "Homologous DNA pairing promoted by a 20 amino acid peptide derived from RecA", <i>Science</i> , 272:868-872 (1996).		
DL	117.			West, S. "Enzyme and Molecular Mechanism of Genetic Recombination," <i>Annu. Rev. Biochem.</i> , 61:603-640 (1992).		
DL	118.			Woo, J., et al., "G/C-modified oligodeoxynucleotides with selective complementarity: synthesis and hybridization properties", <i>Nucleic Acids Res.</i> , 24(13):2470-2475 (1996).		
DL	119.			Wu et al., "Targeting Genes: Delivery and Persistent Expression of a Foreign Gene Driven by Mammalian Regulatory Elements <i>in Vivo</i> ," <i>The Journal of Biological Chemistry</i> , 264(29):16985-16987 (1989).		
DL	120.			Yoon, K., et al., "Targeted gene correction of episomal DNA in mammalian cells mediated by a chimeric RNA-DNA oligonucleotide", <i>Proc. Natl. Acad. Sci. USA</i> , 93:2071-2076 (Mar. 1996).		
DL	121.			Yu et al., "Structural Data Suggest that the Active and Inactive Forms of the RecA Filament are not Simply Interconvertible," <i>J. Mol. Biol.</i> , 227:334-348 (1992).		

Examiner Signature	David Lambert	Date Considered	11/11/03
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